

Appln. No. 10/615,342  
Amdt. dated April 28, 2006  
Reply to Office Action of March 28, 2006

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**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1-64. Canceled.

65. (Previously presented) A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:  
producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition.

66. (Previously presented) A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:  
producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein producing a position value comprises interpolating said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition.

67. Canceled.

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68. (Previously presented) A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:

producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein producing a position value comprises producing said position value by addressing a lookup table of position values with a measured pH condition value representing said measured pH condition of said test sample.

69. Canceled.

70. (Previously presented) A computer-implemented process for producing a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the process comprising:

producing a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, the process further comprising accessing a pre-defined record specifying peaks in said reference spectrum and adjusting a position value in said pre-defined record, said position value in said pre-defined record being said position value of said at least one peak, wherein adjusting comprises locating a pH condition value dependent function in said pre-defined record, producing said position value from said pH condition value dependent function and associating said position value with said pre-defined record.

71. (Previously presented) The computer-implemented process of claim 70 wherein associating comprises storing said position value in said pre-defined record.

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72-73 Canceled.

74. (Previously presented) A computer-readable medium encoded with computer readable instructions for causing a processor circuit to produce a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the instructions comprising:

a set of codes for directing the processor circuit to produce a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution; the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein the set of codes further comprise codes that direct the processor circuit to interpolate said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition.

75. (Currently amended) A signal encoded with computer-readable instructions operable to cause a processor circuit to produce a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the signal comprising:

a signal segment comprising codes operable to cause the processor circuit to produce a position value for at least one peak of a reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein the signal directs the processor to interpolate said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition.

76. (Currently amended) An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising:

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a processor circuit programmed to produce a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, wherein the apparatus is further adapted to interpolate said position value from position values associated with base reference spectra associated with a pH condition nearest to said measured pH condition.

77. (Previously presented) An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising:

means for receiving a measured pH condition value representing a pH condition of the test sample;

means for receiving a representation of a position value of at least one peak in a base reference spectrum for the hypothetical solution; and

means for producing a position value for at least one peak of a reference spectrum in response to said measured pH condition value of the test sample, and the position value of said at least one peak in said base reference spectrum, the base reference spectrum being associated with a pH condition value of the hypothetical solution that is different from said measured pH condition value, wherein said producing means is further adapted to interpolate said position value from position values associated with base reference spectra associated with a pH condition value nearest to said measured pH condition value.

78. (Previously presented) A computer-readable medium encoded with computer readable instructions for causing a processor circuit to produce a representation of a reference spectrum for a reference hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the instructions comprising:

a set of codes adapted to direct the processor circuit to:

produce a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a

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base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition,

produce a position value by addressing a lookup table of position values with a measured pH condition value representing said measured pH condition of said test sample.

79. (Previously presented) A signal encoded with computer-readable instructions operable to cause a processor circuit to produce a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the signal comprising a signal segment comprising:

codes operable to cause the processor circuit to:

produce a position value for at least one peak of a reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, and

produce the position value by addressing a lookup table of position values with a measured pH condition value representing said measured pH condition of said test sample.

80. (Previously presented) A computer-readable medium encoded with computer readable instructions for causing a processor circuit to produce a representation of a reference spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the instructions comprising:

a set of codes adapted to direct the processor circuit to:

produce a position value for at least one peak of the reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being

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associated with a pH condition of the hypothetical solution that is different from said measured pH condition:

- access a pre-defined record specifying peaks in said reference spectrum;
- adjust a position value in said pre-defined record, said position value in said pre-defined record being said position value of said at least one peak, wherein the adjusting of the position value in said pre-defined record comprises:
  - locating a pH condition value dependent function in said pre-defined record;
  - producing said position value from said pH condition value dependent function; and
  - associating said position value with said pre-defined record.

81. (Previously presented) A signal encoded with computer-readable instructions operable to cause a processor circuit to produce a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the signal comprising:

- a signal segment comprising codes operable to cause the processor circuit to:
  - produce a position value for at least one peak of a reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition;
  - access a pre-defined record specifying peaks in said reference spectrum;
  - adjust a position value in said pre-defined record, said position value in said pre-defined record being said position value of said at least one peak, wherein the adjusting of the position value in said pre-defined record comprises:
    - locating a pH condition value dependent function in said pre-defined record,

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producing said position value from said pH condition value dependent function, and  
associating said position value with said pre-defined record.

82. (Previously presented) An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising:

a processor circuit programmed to produce:

a position value for at least one peak of a reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition, and

a position value by addressing a lookup table of position values with a measured pH condition value representing said measured pH condition of said test sample.

83. (Previously presented) An apparatus for producing a representation of a spectrum for a hypothetical solution having a first pH condition, for use in determining the composition of a test sample, the apparatus comprising a processor circuit programmed to:

produce a position value for at least one peak of a reference spectrum in response to a measured pH condition of the test sample, and a property of at least one peak in a base reference spectrum for the hypothetical solution, the base reference spectrum being associated with a pH condition of the hypothetical solution that is different from said measured pH condition,

access a pre-defined record specifying peaks in said reference spectrum;

adjust a position value in said pre-defined record, said position value in said pre-defined record being said position value of said at least one peak,

adjust said position value by locating a pH condition value dependent function in said pre-defined record, and

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produce said position value from said pH condition value dependent function and to associate said position value with said pre-defined record.

84. (Previously presented) The computer-implemented process of claim 68 wherein said lookup table specifies peak positions for various pH conditions and wherein addressing said lookup table comprises:

accessing a pre-defined record comprising a link to said lookup table;  
retrieving said position value from said lookup table; and  
associating said position value with said pre-defined record.

85. (Previously presented) The computer-implemented process of claim 84 wherein associating comprises storing said position value in said predefined record.